CURRICULUM VITAE

Umut Atakan Gurkan, PhD
Assistant Professor
Case Biomanufacturing and Microfabrication Laboratory
Mechanical and Aerospace Engineering Department, Department of Orthopaedics,
Case Western Reserve University
Advanced Platform Technology Center, Louis Stokes Cleveland Veterans Affairs Medical Center
Office: Glennan 616B, 10900 Euclid Avenue, Cleveland, OH, 44106
Phone: +1 (216) 368-6447, Email: umut@case.edu
Web: http://www.case-bml.net

PERSONAL STATEMENT

I am leading the CASE Biomanufacturing and Microfabrication Laboratory (CASE-BML) at Case Western Reserve University (CWRU). Inspired by modern advanced manufacturing methods, the primary focus of CASE-BML is to develop micro/nano-scale technologies and biomanufacturing complex multiscale biological systems for blood cell research, cardiovascular medicine, orthopaedics, musculoskeletal research, regenerative medicine, and advanced cell therapies.

POSITIONS AND EMPLOYMENT

2013 – Present **Assistant Professor**
Case Biomanufacturing and Microfabrication Laboratory
Mechanical and Aerospace Engineering, Case Western Reserve University

2013 – Present **Assistant Professor**
Department of Orthopaedics, Case Western Reserve University

2013 – Present **Core Investigator**
Advanced Platform Technology Center, Louis Stokes Cleveland Veterans Affairs Medical Center

2010 – 2012 **Postdoctoral Research Fellow in Medicine**
Harvard Medical School, Center for Biomedical Engineering at Brigham & Women's Hospital, Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA

2009 - 2011 **Co-founder and Chief Technology Officer**
FlexTissue Biomedical LLC, West Lafayette, IN (http://www.flextissue.com)

2006-2010 **Research Assistant**
Purdue University, Weldon School of Biomedical Engineering, West Lafayette, IN

2006-2009 **Teaching Assistant**
Purdue University, Weldon School of Biomedical Engineering, West Lafayette, IN

2005-2006 **Teaching Assistant**
University of Toledo, Bioengineering Department, Toledo, OH

EDUCATION AND TRAINING

2010 - 2012 **Postdoctoral Research Fellow in Medicine**
Harvard Medical School, Division of Biomedical Engineering at Brigham & Women's Hospital, Harvard-MIT Division of Health Sciences and Technology

2010 **Ph.D. in Biomedical Engineering**
Purdue University, Weldon School of Biomedical Engineering

2005 **B.S. in Mechanical Engineering**, *High Honor (Magna cum Laude)*
Middle East Technical University, Turkey

2004 **B.S. in Chemical Engineering**, *High Honor (Magna cum Laude)*
Middle East Technical University, Turkey

AWARDS AND HONORS

2013	**Doris Duke Innovations in Clinical Research Award**
2013	**Belcher-Weir Family Pediatric Innovation Award**
2013	**Steve Garverick Memorial Innovation Incentive Award**
2011	**IEEE-Engineering in Medicine and Biology Society (EMBS) Wyss Award for Translational Research,** 1st Place among 77, Umut A. Gurkan, John K. Tucker, and Utkan Demirci, *"Home Healthcare Portal for Improved Management of Peritoneal Dialysis Therapy"*
2011	**Partners in Excellence Award for Outstanding Community Contributions**, Brigham and Women's Hospital, Harvard Medical School
2009	**Geddes-Laufman-Greatbatch Outstanding Graduate Student Award,** Purdue University
2009	**Top Dissertation Proposal Award,** Weldon School of Biomedical Engineering, Purdue University
2009	**Graduate Teacher Certificate,** Purdue University Center for Instructional Excellence
2009	**A. H. Ismail Interdisciplinary Program Doctoral Research Travel Award,** Purdue University
2009	**Joe Bourland Graduate Student Travel Award,** Purdue University
2008	**Purdue Graduate Student Government Travel Grant**
1999 – 2004	**Sabanci Foundation Scholarship**

PUBLICATION RECORD SUMMARY

Peer-reviewed journal publications: 40

Citations: 576; *'h' index:* 14; *i10-index:* 22

(Source: Google Scholar Citations:)

Patents: 1 international, 2 provisional patents

Refereed conference abstracts: 60; Book chapters: 2

PUBLICATIONS

1. Alapan Y., I. Sayin, **U. A. Gurkan**, *Making the Smallest Medical Devices*, ASME Mechanical Engineering Magazine, 2014, 136 (2), 36-38
2. **Gurkan U. A.**, R. El Assal, S. E. Yildiz, Y. Sung, A. J. Trachtenberg, W. P. Kuo, U. Demirci, *Engineering anisotropic biomimetic fibrocartilage microenvironment by bioprinting mesenchymal stem cells in nanoliter gel droplets*, Molecular pharmaceutics, 2014 (in press)
3. Wang S., S. Tasoglu, P. Z. Chen, M. Chen, R. Akbas, S. Wach, C. I. Ozdemir, **U. A. Gurkan**, F. F. Giguel, D. R. Kuritzkes, U. Demirci, *Micro-a-fluidics ELISA for Rapid CD4 Cell Count at the Point-of-Care*, Scientific Reports, 2014, 4, 3796
4. Akkaynak D., T. Treibitz, B. Xiao, **U. A. Gurkan**, J. Allen, U. Demirci, and R. Hanlon, *Use of commercial off-the-shelf (COTS) digital cameras for scientific data acquisition and scene-specific color calibration,* Journal of the Optical Society of America A, 2014, 31(2) 312-321
5. **Gurkan U. A.,** Y. Fan, F. Xu, B. Erkmen, E. S. Urkac, G. Parlakgul, J. Bernstein, W. Xing, E. S. Boyden, and U. Demirci, *Simple precision creation of digitally specified, spatially heterogeneous, engineered tissue architectures*, Advanced Materials, 2013, 25, 1192-1198 (*Highlighted in MIT News, Wired News, Science Daily, and other news agencies around the world: "Precisely engineering 3-D brain tissues"*)
6. Tasoglu S., **U. A. Gurkan**, S. Wang, and U. Demirci, *Manipulating biological agents and cells in microscale volumes for applications in medicine*, Chemical Society Reviews, 2013, 42(13), 5788-5808

7. Rizvi I., **U. A. Gurkan**, S. Tasoglu, N. Alagic, J.P. Celli, L. B. Mensah, Z. Mai, U. Demirci, T. Hasan. *Flow induces epithelial-mesenchymal transition, cellular heterogeneity and biomarker modulation in 3D ovarian cancer nodules*. Proceedings of the National Academy of Sciences, 2013, 110 (22), E1974-E1983
8. Inci F.*, O. Tokel*, S. Wang, **U. A. Gurkan**, S. Tasoglu, D. R. Kuritzkes, and U. Demirci, *Nanoplasmonic quantitative detection of intact viruses from unprocessed whole blood*, ACS Nano, 2013, 7 (6), 4733-4745
9. Tasoglu, S., H. Safaee, X. Zhang, J. L. Kingsley, P. N. Catalano, **U. A. Gurkan**, A. Nureddin, E. Kayaalp, R.M. Anchan, R. L. Maas, E. Tüzel, U. Demirci, *Microfluidic Sorting: Exhaustion of Racing Sperm in Nature-Mimicking Microfluidic Channels During Sorting*, Small, 2013, 9(20), 3366
10. Tasoglu S., D. Kavaz, **U. A. Gurkan**, S. Guven, P. Chen, R. Zheng, and U. Demirci, *Paramagnetic Levitational Assembly of Hydrogels*, Advanced Materials, 2013, 25(8), 1081
11. **Gurkan U. A.**, S. Tasoglu, D. Kavaz, M. C. Demirel, and U. Demirci, *Emerging Technologies for Assembly of Microscale Hydrogels*, Advanced Healthcare Materials, 2012, 1, 149-158
12. **Gurkan U. A.**, V. Kishore, R. Golden, C. Riley, J. Adamec and O. Akkus, *Immune and Inflammatory Pathways are Involved in Inherent Bone Marrow Ossification,* Clinical Orthopedics and Related Research, 2012, 470:2528–2540
13. **Gurkan U. A.,** S. Tasoglu, D. Akkaynak, O. Avci, S. Unluisler, S. Canikyan, N. MacCallum, and U. Demirci, *Smart interface materials integrated with microfluidics for on-demand local capture and release of cells*, Advanced Healthcare Materials, 2012, 1, 661-668
14. Wang A. S.*, Inci F.*, T. L. Chaunzwa, A. Ramanujam, A. Vasudevan, S. Subramanian, A. Ip, B. Sridharan, **U. A. Gurkan**, and U. Demirci, *Portable Microfluidic chip for Detection of Escherichia coli in Produce and Blood,* International Journal of Nanomedicine, 2012, 7, 2591 – 2600
15. Xu F., F. Inci, O. Mullick, **U. A. Gurkan**, Y. Sung, D. Kavaz, B. Q. Li, E. B. Denkbas, and U. Demirci, *Release of magnetic nanoparticles from cell-encapsulating biodegradable nanobiomaterials*, ACS Nano, 2012
16. Wang A. S., M. Esfahani, **U. A. Gurkan**, F. Inci, U. Demirci, *Efficient on-chip isolation of HIV subtypes*, Lab on A Chip, 2012, 12, 1508-1515
17. Ceyhan E.*, F. Xu*, **U. A. Gurkan***, A. E. Emre, E. S. Turali, M. Wu, R. El Assal, A. Acikgenc, and U. Demirci, *Prediction and Control of the Number of Cells in Microdroplets with Stochastic Modeling*, Lab on a Chip, 2012
18. **Gurkan U. A.**, T. Anand, H. Tas, D. Elkan, A. Akay, H. O. Keles, and U. Demirci, *Controlled viable release of selectively captured label-free cells in microchannels,* Lab on A Chip, 2011, 11, 3979-3989 (*Top 10 most accessed article in October 2011 in Lab on a Chip Journal*)
19. **Gurkan U. A.***, S. Moon*, H. Geckil, S. Wang, F. Xu, T.J. Lu, and U. Demirci, *Miniaturized Lensless Imaging Systems for Cell and Microorganism Visualization in Point-of-Care Testing*, Biotechnology Journal, 2011. 6(2), 138-149
20. **Gurkan U. A.**, V. Kishore, K. W. Condon, T. M. Bellido and O. Akkus, *Scaffold-Free Multicellular Three-Dimensional In Vitro Model of Osteogenesis,* Calcified Tissue International, 2011, 88(5), 388-401
21. **Gurkan U. A.**, A. Krueger and O. Akkus, Ossifying Bone Marrow *Explant Culture as a Three-dimensional Mechanoresponsive In Vitro Model of Osteogenesis,* Tissue Engineering Journal Part A, 2011, 17(3-4), 417-428
22. **Gurkan U. A.,** J. Gargac and O. Akkus, *The Sequential Production Profiles of Growth Factors and Their Relations to Bone Volume in Ossifying Bone Marrow Explants*, Tissue Engineering Journal Part A, 2010, 16(7), 2295-2306
23. **Gurkan U. A.***, Sekeroglu K.*, U. Demirci and M. C. Demirel, *Transport of a soft cargo on a nanoscale ratchet,* Applied Physics Letters, 2011, 99, 063703
24. **Gurkan U. A.** and F. Xu, Editorial: *Scaffold-free cell-based approaches in biomedicine and biotechnology*, Biotechnology Journal 2011, 6 (12), 1426-1427
25. Moon S, E. Ceyhan, **U. A. Gurkan**, and U. Demirci, *Statistical modeling of single target cell encapsulation*, PloS One, 2011, 6(7): e21580
26. Xu F., B. Sridharan, S. Wang, **U. A. Gurkan,** B. Syverud and U. Demirci, *Embryonic Stem Cell Printing for Controllable Uniform Sized Embryoid Body Formation*, Biomicrofluidics, 2011, 5, 022207

27. Xu F., J. Wu, S. Wang, N. G. Durmus, **U. A. Gurkan** and U. Demirci, *Microengineering Methods for Cell Based Microarrays and High Throughput Drug Screening Applications,* Biofabrication, 2011 Sep; 3(3): 034101

28. Xu F., T. D. Finley, M. Turkaydin, Y. Sung, **U. A. Gurkan**, R. Guldiken, and U. Demirci, *The assembly of cell-encapsulating microscale hydrogels using acoustic waves,* Biomaterials, 2011 Nov; 32(31):7847-55

29. Xu F., B. Sridharan, S. Wang, N. G. Durmus, A. S. Yavuz, **U. A. Gurkan** and U. Demirci, *Living Bacterial Sacrificial Porogens for Porous Hydrogel Scaffolds,* PLoS One, 2011 *6(4): e19344*

30. Xu F., C. M. Wu, V. Rengarajan, T. D. Finley, H. O. Keles, Y. Sung, B. Q. Li, **U. A. Gurkan,** and U. Demirci, *Three-dimensional magnetic assembly of microscale hydrogels*, Advanced Materials, 2011, 23(37), 4254–4260

31. Xu F., Beyazoglu T., E. Hefner, **U. A. Gurkan** and U. Demirci, *Automated and Adaptable Quantification of Cellular Alignment from Microscopic Images for Tissue Engineering Applications,* Tissue Engineering Part C, 2011, 17(6), 641-649

32. Moon S., **U. A. Gurkan**, J. Blander, W. W. Fawzi, S. Aboud, F. Mugusi, D. Kuritzkes, and U. Demirci, *Enumeration of CD4+ T-Cells Using a Portable Microchip Count Platform in Tanzanian HIV-Infected Patients*, PloS One, 2011, 6(7) e21409 (Highlighted in: Lab on A Chip, 2011, 11)

33. Zhang X., P. I. Khimji, **U. A. Gurkan**, H. Safaee, P. Catalano, H. O. Keles, E. Kayaalp, U. Demirci, *Lensless Imaging for Simultaneous Microfluidic Sperm Monitoring and Tracking*, Lab on A Chip, 2011, 11, 2535-2540, DOI: 10.1039/C1LC20236 (*Highlighted in Nature Photonics, 2011, 5 (512)*)

34. Zhang X., P. N. Catalono, **U. A. Gurkan,** P. I. Khimji and U. Demirci, *Emerging Technologies in Medical Applications of Minimum Volume Vitrification*, Nanomedicine, 2011, 6(6), 1115-1129

35. Zhang X., P. I. Khimji, L. Shao, H. Safaee, K. Desai, H. O. Keles, **U. A. Gurkan,** E. Kayaalp, A. Nureddin, R. M. Anchan, R. L. Maas and U. Demirci, *Nanoliter Droplet Vitrification for Oocyte Cryopreservation*, Nanomedicine, 2011, 7(4), 553-564

36. **Gurkan U. A.**, X. Cheng*, V. Kishore*, J. A. Uquillas and O. Akkus, *Comparison of Morphology, Orientation, and Migration of Tendon Derived Fibroblasts and Bone Marrow Stromal Cells on Electrochemically Aligned Collagen Constructs*, Journal of Biomedical Materials Research Part A, 2010, 94A(4), 1070-1079

37. Meldrum R. D., **U. A. Gurkan**, S. A. Kattaya, O. Akkus, *Osteogenic Effects of Preparations of Rat Pulmonary Alveolar Macrophages Challenged with Staphylococcus Aureus*, Indiana Orthopaedic Journal, 2009, Vol. 3, 28-29

38. **Gurkan U. A.** and O. Akkus, *The mechanical environment of bone marrow*, Annals of Biomedical Engineering, 2008, 36(12), 1978-1991

39. Cheng X., **U. A. Gurkan**, C. J. Dehen, M. P. Tate, H. W. Hillhouse, G. J. Simpson and O. Akkus, *An electrochemical fabrication process for the assembly of anisotropically oriented collagen bundles*, Biomaterials, 2008, 29(22), 3278-3288

40. Yildiz, U., **U. A. Gurkan**, C. Ozgen, and K. Leblebicioglu, *State estimator design for multicomponent batch distillation columns.* Chemical Engineering Research & Design, 2005. 83(A5), 433-444

Book Chapters

41. **Gurkan U. A.** *, S. Tasoglu*, S. Guven, U. Demirci, *Organ Printing and Cell Encapsulation* in *Scaffolds for Tissue Engineering: Biological Design, Materials and Fabrication*, Edited by Antonella Motta and Claudio Migliaresi, 2013, Pan Stanford Publishing, Singapore.

42. Asghar W., H. Shafiee, P. Chen, S. Tasoglu, S. Guven, **U. A. Gurkan**, U Demirci, *In Vitro Three-Dimensional Cancer Culture Models*, Cancer Targeted Drug Delivery, 2013, 635-665

Ph.D. Dissertation

43. **Gurkan, U. A.**, *Engineering of bone marrow in vitro for investigating the role of growth factors and their mechanoresponsiveness in osteogenesis*. 2010, 3413893, Purdue University, Indiana, United States.

* indicates equal contribution

PATENTS

1. Akkus O., **U. A. Gurkan**, A. Aref and R. Meldrum, *System and method for prevention of hypertrophic scars by actuable patch*, International Patent, World Intellectual Property Organization, Issued: 29 December 2011, WO 2011/163673 A2, International Application Number: PCT/US2011/042064
2. **Gurkan U. A.**, U. Demirci, D. A. Yellin, C. Brenan, *Portal for management of peritoneal dialysis therapy,* US Patent Application
3. **Gurkan U. A.**, M. Costa, and Y. Alapan, *System and method for isolation and expansion of cells, Provisional Patent Application*, Case Western Reserve University Technology Transfer Office, Filed in 2013

CONFERENCE ABSTRACTS

1. **Gurkan U.A.**, B. Erkmen, E. S. Urkac, J. Bernstein, E. S. Boyden, U. Demirci, *Microfabrication of Digitally Specified, Spatially Heterogeneous, Engineered Tissue Architectures*, The European Chapter Meeting of the Tissue Engineering and Regenerative Medicine International Society (TERMIS-EU 2013), June 2013, Istanbul, Turkey
2. Kilinc S., **U. A. Gurkan**, G. Koyuncu, M. Dogan, C. Tugmen, E. Kebapci, C. Karaca, S. Tan, E. E. Pala, U. Bayol, M. Baran, Y. Kurtulmus, I. Pirim, S. Guven, U. Demirci, *Bone Marrow Mesenchymal Stem Cell Infusion in Intestinal Transplant Patients with Short Bowel Syndrome,* The European Chapter Meeting of the Tissue Engineering and Regenerative Medicine International Society (TERMIS-EU 2013), June 2013, Istanbul, Turkey
3. **Gurkan U. A.**, *Selective capture and on-demand local release of rare cells in stimuli-responsive microfluidic channels*, NIH Annual Single Cell Analysis Investigators Meeting, April 2013, Bethesda, MD
4. **Gurkan U. A.**, V. Giannakeas, D. Akkaynak, T. Moore, C. Brenan, A. Eryilmaz, E. Topsakal, D. R. Kuritzkes, L-L. Hsiao, J. V. Bonventre, J. K. Tucker, U. Demirci, *Homecare Portal for Peritoneal Dialysis Therapy Monitoring and Management*, ASME 2nd Global Congress on NanoEngineering for Medicine & Biology, Boston, MA (2013) (Highlighted by Reuters on February 11, 2013: "*Disposable chip could find infections in home peritoneal dialysis*")
5. **Gurkan U. A.**, K. Sekeroglu, M. Demirel, U. Demirci, *Transport of Microscale Hydrogels on a Nanoscale Ratchet*, ASME 2nd Global Congress on NanoEngineering for Medicine & Biology, Boston, MA (2013)
6. **Gurkan U. A.**, S. Tasoglu, D. Akkaynak, O. Avci, S. Unluisler, S. Canikyan, N. MacCallum, U. Demirci, *Stimuli-responsive Microfluidics for On-demand Local Cell Capture and Release*, ASME 2nd Global Congress on NanoEngineering for Medicine & Biology, Boston, MA (2013)
7. Inci F., S. Wang, **U. A. Gurkan**, D. R. Kuritzkes, U. Demirci. *Nanoplasmonic Biosensing Platform for Multiple Pathogen Detection,* Transducers 2013 & Eurosensors XXVII: the 17th International Conference on Solid-State Sensors, Actuators and Microsystems, Barcelona, Spain (2013)
8. **Gurkan U. A.**, H. Tas, T. Anand, and U. Demirci, *Label-free and Viable Stem Cell Isolation from Peripheral Blood with a Thermoresponsive Microfluidic Chip,* MRS 2012 Spring Meeting, April 9-13, 2012, San Francisco, CA
9. **Gurkan U. A.**, R. E. Assal, Y. Sung, F. Xu, Demirci U., *Microdroplet-Based Hydrogel Printing for Engineering Anisotropic Stem Cell Microenvironment,* 9th World Biomaterials Congress (WBC), June 1-5, 2012, Chengdu, China
10. **Gurkan U. A.**, Tasoglu S., Akkaynak D., Avci O., Unluisler S., Canikyan S., MacCallum N., Demirci U., *Stimuli-responsive microfluidics for on-demand local cell capture and release*, Materials Research Society Fall Meeting, Boston, MA, USA (2012).
11. **Gurkan U. A.**, Sekeroglu K., Demirci U., Demirel MC., *Transport of microscale hydrogels on a nanoscale ratchet*, Materials Research Society Fall Meeting, Boston, MA, USA (2012).
12. **Gurkan U. A.**, Sung Y., El Assal R., Xu F., Trachtenberg A., Kuo W., Demirci U. *Bioprinting anisotropic stem cell microenvironment*. 3rd Tissue Engineering and Regenerative Medicine, Vienna, Austria (2012).
13. Rizvi I., S. Anbil, J. P. Celli, N. Alagic, **U. A. Gurkan**, S. Tasoglu, S. A. Elrington, U. Demirci and T. Hasan, *A 3D Platform for Micrometastatic Ovarian Cancer to Evaluate Therapeutic Parameters and Model Determinants of Tumor Growth*, SPIE-BIOS Photonics West 2012, 21 - 26 January 2012, San Francisco, California, USA
14. Tasoglu S., Kavaz D., **Gurkan U. A.**, Demirci U., *Magnetic 3D assembly of microgels for tissue engineering and regenerative medicine". 3rd Tissue Engineering and Regenerative Medicine*, Vienna, Austria (2012).

15. Inci F., Kavaz D., **Gurkan U. A.**, Xu F., Mullick O., Sung Y., Baoqiang L., Demirci U*., Mechanical characteristics and release properties of magnetic nanoparticle encapsulating biodegradable hydrogels,* 3rd Tissue Engineering and Regenerative Medicine, Vienna, Austria (2012).
16. Inci F., Wang S., **Gurkan U. A.**, Kuritzkes DR., Demirci U. *Surface Plasmon Based Viral Load Microchip for HIV Subtypes using Whole Blood,* Oak Ridge Conference, Oak Ridge, TN, USA (2012).
17. Sokullu-Urkac E., **Gurkan U.A.**, Demirci U., *Plasma Treatment on 3D Cell Culture Environment*, 22nd International Conference on the Application of Accelerators in Research and Industry (CAARI-2012), Fort Worth, Texas, (2012)
18. **Gurkan U. A.,** S. Moon, J. Blander, W. Fawzi, S. Aboud, F. Mugusi, D. Kuritzkes, and U. Demirci, A *label-free CD4+ T-lymphocyte counting microfluidic chip for portable point of care testing,* Annual meeting of Biomedical Engineering Society (BMES 2011), October 12-15, 2011, Hartford, Connecticut
19. **Gurkan U. A.**, Sung Y., Xu F., Demirci U., *Engineering of multiphase anisotropic tissue structures by microdroplet hydrogel patterning*, Annual meeting of Biomedical Engineering Society (BMES 2011), October 12-15, 2011, Hartford, Connecticut
20. **Gurkan U. A.**, R. Golden, C. Riley, J. Adamec, and O. Akkus, *Immune and inflammatory pathways are essential for osteogenesis in 3D marrow cultures*, The US National Committee on Biomechanics 3rd Symposium on Frontiers in Biomechanics: Mechanics of Development, June 21, 2011, Farmington, PA
21. **Gurkan U. A.**, A. Dubikovsky, L. J. Freeman, P. W. Snyder, R. D. Meldrum and O. Akkus, *In Vivo Actuation System for Mechanostimulation of Large Wound Healing***,** Proceedings of the ASME Bioeng. Conference, 2011
22. **Gurkan U.** A., O. Akkus and U. Demirci, *Magnetoelastic Radio-Frequency Identification for Biomedical Applications*, National Radio Science Meeting, January 2011, Boulder, CO
23. **Gurkan U. A.**, Xu F., Sung Y., Rengarajan V., Yavuz A. S**.,** Demirci U., *Printing anisotropic cell microenvironment for tissue engineering*, Annual Meeting of the European Chapter of the Tissue Engineering and Regenerative Medicine International Society (TERMIS) 2011, June 7-10, 2011, Granada, Spain
24. **Gurkan U. A.**, F. Xu, Y. Sung, B. Sridharan, A.S. Yavuz and U. Demirci, *Multiphase Anisotropic Tissue Structures by Microdroplet Based Hydrogel Printing,* Materials Research Society Meeting, April 2011, San Francisco, CA
25. **Gurkan U. A.**, H. Tas, T. Anand, and U. Demirci, *Label-free and Viable Stem Cell Isolation from Peripheral Blood with a Disposable Microfluidic Chip*, TERMIS-NA Meeting December 11-14, 2011, Houston, TX
26. **Gurkan U. A.**, Y. Sung, R. E. Assal, and U. Demirci, *Microdroplet-Based Hydrogel Printing for Engineering Anisotropic Stem Cell Microenvironment*, The 2nd Annual Meeting of International Society for Biofabrication, October 6-8, 2011, Toyoma, Japan
27. Zhang X, Khimji I, Shao L., Safaee H., Desai K., Keles H. O., **Gurkan U. A.**, Kayaalp E., Nureddin A., Anchan R.M., Maas R., and Demirci U., *Nanoliter droplet vitrification for cell cryopreservation*, TERMIS-NA Meeting December 11-14, 2011, Houston, TX
28. Sekeroglu K, **U. A. Gurkan**, U. Demirci and M. C. Demirel, *Transport of a soft cargo on a nanoscale ratchet,* MRS Workshop Series › Directed Self-Assembly of Materials*,* September 28, 2011, Nashville, TN
29. Xu F., **Gurkan U. A.**, Finley T. D., Turkaydin M., Yavuz A. S., Demirci U*., Acoustic Directed Microparticle Assembly for Biomedical Applications*, Annual Meeting of the European Chapter of the Tissue Engineering and Regenerative Medicine International Society (TERMIS) 2011, June 7-10, 2011, Granada, Spain
30. Moon S., **U. A. Gurkan**, D. Kuritzkes, and U. Demirci, *CD4+ T-lymphocyte cell counting using a mobile microchip platform: First results on HIV+ subjects*, American Association for Clinical Chemistry 43rd Oak Ridge Conference: Emerging Technologies for 21st Century Clinical Diagnostics, April 14-15, 2011
31. F. Xu, **Gurkan U. A.**, T. D. Finley, M. Turkaydin, A. S. Yavuz, H. O. Keles and U. Demirci, *Directed Assembly of Microscale Particles by Acoustic Waves for Biomedical Applications*, Society for Biomaterials Annual Meeting, April 2011, Orlando, FL

32. Xu F., **Gurkan U. A.**, Finley T. D., Turkaydin M., Yavuz A. S., Keles H. O. and Demirci U., Directed Assembly of Microscale Particles by Acoustic Waves for Biomedical Applications, *Society for Biomaterials Annual Meeting*, April 2011, Orlando, FL

33. Moon S.J., **Gurkan U.A.**. Blander J, Wang S.Q., Eligius L, Fawzi W, Aboud S, Mugusi F, Kuritzkes D, Demirci U., *A Point-of-Care Microchip Platform for HIV-1 Monitoring and Diagnostics,* United States African Command (AFRICOM), Germany, 2011.

34. Wang S. Q., M. Esfahani, **U. A. Gurkan**, D. Kuritzkes, and U. Demirci, *Protein-G based surface chemistry for HIV detection on-chip,* Annual meeting of Biomedical Engineering Society (BMES 2011), October 12-15, 2011, Hartford, Connecticut

35. Wang S. Q., M. Esfahani, B. Cheung, **U. A. Gurkan**, D. Kuritzkes, and U. Demirci, *CD4+ Surface chemistry for detection of HIV in a microfluidic device*, American Association for Clinical Chemistry 43rd Oak Ridge Conference: Emerging Technologies for 21st Century Clinical Diagnostics, April 14-15, 2011

36. Wang S. Q., Esfahani M, **Gurkan U. A.**, Kuritzkes D. Demirci U., *Protein-G based surface chemistry for HIV detection on-chip,* Biomedical Engineering Society Annual Conference. 2011. Hartford, CT, USA. 2011.

37. Wang, S. Q., Moon, S. J., **Gurkan U. A.**, Blander J, Eligius L, Fawzi, W, Aboud, S, Mugusi, F, Kuritzkes, D, Demirci, U, *Microchip based antiretroviral treatment (ART) monitoring of HIV at the point-of-care (POC),* ATACCC 2011 conference. Fort Lauderdale, FL, USA. 2011.

38. Zhang X, Khimji I, Shao L., Safaee H., Desai K., Keles H. O., **Gurkan U. A.**, Kayaalp E., Nureddin A., Anchan R.M., Maas R., and Demirci U., *Nanoliter droplet vitrification for cell cryopreservation*, SysCODE Consortium 2011, Waltham, MA, USA, April 7, 2011

39. Xu F., Sridharan B., Wang S. Q., **Gurkan U. A.**, Syverud B., Demirci U., *Stem cell printing for controlled-size embryoid body formation*, 2011 MRS Spring Meeting, Moscone West and San Francisco Marriott San Francisco, CA, USA, April 25-29, 2011

40. Xu F., V. Rengarajan, T. D. Finley, Y. Sung, B. Sridharan, **U. A. Gurkan**, U. Demirci, *Magnetic Nanoparticle Based Assembly for Microscale Hydrogels*, Proceedings of the Micro Nano Manufacturing Technologies Workshop 2011, Napa, CA

41. Zhang X, I. Khimji, L. Shao, H. Safaee, K. Desai, H. O. Keles, **U. A. Gurkan**, E. Kayaalp, A. Nureddin, R. M. Anchan, R. L. Maas, U. Demirci, *Nanoliter Droplet System for Cell Vitrification,* Annual meeting of Biomedical Engineering Society (BMES 2011), October 12-15, 2011, Hartford, Connecticut

42. **Gurkan U. A.,** A. Krueger and O. Akkus, *The Effect of Mechanical Stimulation on the Production of BMP-2, VEGF, IGF-1 and TGF-b1 by In Vitro Ossifying Rat Bone Marrow Explants*, The 17th Congress of the European Society of Biomechanics, Edinburgh, Scotland, July 2010

43. **Gurkan U. A.** and O. Akkus, *Temporal Productions of BMP-2, IGF-1, VEGF and TGF-21 Correlate Highly with Each Other in Ossifying Marrow Explants*, Orthopedic Research Society 56th Annual Meeting, New Orleans, Louisiana, March 2010

44. **Gurkan U. A.** and O. Akkus, *Temporal Production Levels of VEGF and IGF-1 Correlate with the Final Ossified Volume in Inherently Ossifying Marrow Explants In Vitro*, Orthopedic Research Society 56th Annual Meeting, New Orleans, Louisiana, March 2010

45. Kishore V., **U.A. Gurkan,** J. A. Uquillas and O. Akkus, *Effects of Cell Type and Fabric Orientation on the Population Rates of Collagen Constructs*, Orthopedic Research Society 56th Annual Meeting, New Orleans, Louisiana, March 2010

46. Xu F., B. Sridharan, S. Wang, N. G. Durmus, **U.A. Gurkan** and Utkan Demirci, *Bacterial Printing for Fabricating Microfluidic Hydrogels,* International Conference on Biofabrication, Philadelphia, Pennsylvania, October 2010

47. **Gurkan U. A.**, A. Krueger, O. Akkus, *Mechanical Stimulation Enhances the Production of BMP-2 in Ossifying Rat Bone Marrow Organ Cultures*, Proceedings of the ASME Bioeng. Conference, 2009; Pt. A and B: 295-6.

48. **Gurkan U. A.**, X. Cheng, O. Akkus, *Migration of Tendon Derived Fibroblasts and Bone Marrow Stromal Cells on Electrochemically Aligned Collagen Constructs***,** The 15th International Biomedical Science and Technology

Symposium, Middle East Technical University Northern Cyprus Campus, Turkish Republic of Northern Cyprus, August 2009

49. **Gurkan U. A.**, O. Akkus, *In Vitro Ossifying Bone Marrow Explants Have Osteoinductive Potential via the Media Conditioned By Them***,** The 15th International Biomedical Science and Technology Symposium, Middle East Technical University Northern Cyprus Campus, Turkish Republic of Northern Cyprus, August 2009
50. **Gurkan U. A.**, A. Krueger and O. Akkus, *Mechanical Stimulation Enhances the Production of Bmp-2 in Ossifying Rat Bone Marrow Organ Cultures***,** ASME Summer Bioengineering Conference, Lake Tahoe , CA, June 2009
51. **Gurkan U. A.** and O. Akkus, *Facilitating the Exodus of Adherent Cells Improves In Vitro Bone Formation in Bone Marrow Explants*, Orthopedic Research Society 55th Annual Meeting, Las Vegas, Nevada, February 2009
52. **Gurkan U. A.** and O. Akkus, *The Osteoinductive Potential of Bone Marrow Conditioned Media is Superior to Dexamethasone and rhBMP-2*, Orthopedic Research Society 55th Annual Meeting, Las Vegas, Nevada, February 2009
53. Meldrum R. D., **U.A. Gurkan**, S. A. Kattaya, O. Akkus, *Staphylococcus Aureus Inhibits the Osteogenesis Induced by Rat Pulmonary Alveolar Macrophages*, Orthopedic Research Society 55th Annual Meeting, Las Vegas, Nevada, February 2009
54. Kishore V., **U.A. Gurkan,** J. A. Uquillas and O. Akkus, *Comparison between the Migration Rates of Bone Marrow Stromal Cells and Tendon Derived Fibroblasts on Random and Electrochemically Aligned Collagen Constructs*, Society for Biomaterials, Biomaterials Day, Lexington, Kentucky, September 2009
55. **Gurkan U. A.**, O. Akkus, *An implantable magnetoelastic sensor system for wireless physiological sensing of viscosity*, Proceeding of the ASME Summer Bioengineering Conference, 2007:759-60.
56. **Gurkan U. A.**, X. Cheng, O. Akkus, *Structural Organization and cellular response of electrochemically aligned collagen bundles*, The Seventh Annual Meeting of the Midwest Tissue Engineering Consortium (M-TEC 2008), University of Cincinnati, Cincinnati OH, April 2008
57. **Gurkan U. A.**, O. Akkus, *An implantable magnetoelastic sensor system for wireless physiological sensing of viscosity*, ASME Summer Bioengineering Conference, Keystone CO, June 2007
58. Cheng X., **U. A. Gurkan**, O. Akkus, *Feasibility of electrochemically aligned collagen bundles for ligament/tendon tissue engineering*, International Symposium on Ligaments & Tendons - VIII, Stanford University, March 2008
59. Cheng X., **U. A. Gurkan**, O. Akkus, *Biomechanical evaluation of a novel electrochemically synthesized collagen constructs for tendon/ligament tissue engineering*, 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, March 2008
60. Santoso A., **U. A. Gurkan**, J. Uquillas, O. Akkus, A. Ivanisevic, *Collagen Fiber Orientation and Proteoglycan Influence on Retinal Pigment Epithelial (RPE) Cell Attachment and Morphology,* Biomedical Engineering Society, 2008 Annual Fall Meeting, St. Louis, Missouri

INVITED SEMINARS/TALKS

1. Stevens Institute of Technology University Seminar, *Micro/nano-scale technologies for rare cell isolation and microphysiological systems engineering*, October 23, 2013, Hoboken, NJ
2. Akdeniz University Seminar, *Micro/nano-scale technologies for rare cell isolation and microphysiological systems engineering,* June 17, 2013, Antalya, Turkey
3. OMICS Group International Conference on Tissue Science & Engineering, *Immune and inflammatory pathways are involved in bone regeneration through inherent bone marrow ossification*, October 2012, Chicago, IL
4. Illinois Institute of Technology Biomedical Engineering Department, *Cell and tissue engineering for biomanufacturing multiscale physiological systems*, April 12, 2012.
5. Case Western Reserve University, Case School of Engineering, *Biomanufacturing of multiscale musculoskeletal and microphysiological systems*, March 26, 2012.

6. Northeastern University Mechanical and Industrial Engineering Colloquium Series, *Mechanics of Cell Microenvironment in Bioengineering and Regenerative Medicine*, January 27, 2012.
7. Pre-Conference Short Course; Scaffolds: Bridging the Gap between 2D and 3D. Talk Title: *"A Scaffold-Free Multicellular Three-Dimensional in vitro Model of Osteogenesis"*. CHI's Predictive Functional Human Tissue Models Conference, Predictive Functional Human Tissue Models: Moving into the Third Dimension of Drug Discovery and Development, Omni Parker House, Boston, MA. November 17-18, 2011.
8. Translation of innovation from academia to industry (Panel), The Harvard Catalyst Laboratory for Innovative Translational Technologies (HC-LITT) and the Harvard Catalyst Central Laboratory (HCCL), invited as a panelist with seminar on: *"Stem cell isolation from blood with a disposable microchip",* October 13, 2011
9. Quantum Science Symposium 2011, Quantum Science Biology Meeting, Talk Title: *"Microscale Technologies for Regeneration of Functional Tissue Models In Vitro",* Cambridge, MA, September 27, 2011
10. Clemson University, Bioengineering Department (June 13, 2011)
11. University of Massachusetts Lowell, Chemical Engineering Department (May 17, 2011)
12. Koc University, School of Engineering, Istanbul, Turkey (May 3, 2011)
13. Harvard Medical School, BAMM Labs Research Seminar (February 14, 2010)
14. Bilkent University Mechanical Engineering Department Seminar (January 28, 2010)
15. Case Western Reserve University, Biomedical Engineering Research Seminar (December 18, 2009)
16. University of Notre Dame Bioresearch Seminar (November 19, 2009)

EDITORIAL ROLE

1. Founding Associate Editor, Nanobiomedicine Journal (2014-)
2. Editorial Board Member, Advanced Health Care Technologies (2013 –)
3. Editorial Board Member, International Journal of Nanomedicine (2012 –)
4. Guest Editor for Wiley Biotechnology Journal Special Issue on: *"Scaffold-free Cell Based Systems: Cell Therapies, Tissue Models, Biosensors"* (2011)
5. Editor, *Volume 2: Applications of Hydrogels in Regenerative Medicine* in *Gels Handbook*, Tentative publication date: 2014, World Scientific Publishing Company

AD HOC REVIEWER

1. Journal of Orthopedic Research
2. International Journal of Nanomedicine
3. Tissue Engineering Journal
4. Journal of Medical Devices
5. ACS Applied Materials & Interfaces
6. PloS One Journal
7. Biotechnology Journal (Guest Editor)
8. Annals of Biomedical Engineering Journal
9. Purdue University Society for Biomaterials
10. Purdue Graduate Student Government Travel Grant Committee (invited reviewer)

PROFESSIONAL MEMBERSHIPS

2013 – Present	American Society of Mechanical Engineers (ASME)
2013 – Present	Institute of Electrical and Electronics Engineers (IEEE)
2011 – Present	Biomedical Engineering Society (BMES)
2011 – Present	European Society of Biomechanics (ESB)

2010 – Present	Tissue Engineering and Regenerative Medicine International Society (TERMIS)
2010 – Present	Founding Member of the International Society for Biofabrication
2008 – Present	Materials Research Society (MRS)

TEACHING AND MENTORING

Teaching at Case Western Reserve University

2013 Fall	EMAE 456: Micro-Electro-Mechanical Systems in Biology and Medicine (BioMEMS)
2014 Spring	EMAE 370: Design of Mechanical Elements

Student Success Jobs Program (SSJP) Mentor, Brigham and Women's Hospital, Harvard Medical School

2010-2012 BWH-SSJP is an intensive year-round employment and mentoring program for students of Boston high schools. This program introduces high school students in the 10th -12th grades from the city's lowest income communities to careers in health, science and medicine by offering paid internships with BWH and in research laboratories. The goal of SSJP program is to address the need for proficient and traditionally underrepresented populations, female students and minorities in health, science and medical careers, and support academic progress and post-secondary education of participating Boston public school students. Dr. Gurkan served as a voluntary mentor in this program at BWH.

Graduate Teacher Certificate (GTC) awarded by Purdue University Center for Instructional Excellence

2008-2010 Completed a four-semester program designed to enhance teaching skills. Participated in video- taped critiques of teaching; received mid-semester end-semester and student feedback and evaluations; attended professional development seminars/workshops.

Graduate Student Mentorship

Summer 2008, 2009 Purdue Summer Undergraduate Research Fellowship Program

Teaching at Purdue University

Fall 2007, 2008 Scanning Electron Microscopy Laboratory course (HORT 595B), Graduate Level, Purdue University Life Sciences Microscopy Facility, instructed 12 graduate students on the use of SEM for biological imaging, performed oral examination with weekly homework.

Teaching Assistantship at Purdue University

Spring 2006, 2007	Biomechanics of Hard and Soft Tissues course (BME204), Sophomore Level, Purdue University
Fall 2005	Biomaterials course (BIOE2200), Sophomore Level, The University of Toledo
2000 – 2004	Student Assistant for Computer Education on University Campus, Middle East Technical University Computer Center

LEADERSHIP AND SERVICE

2013 – Present	Chair, CWRU Mechanical and Aerospace Engineering Research Seminar Series Committee
2014 – Present	Member, CWRU Mechanical and Aerospace Engineering Undergraduate Committee
2013	Session Organizer and Chair, *Biological Sensors and Systems for Diagnostics*, the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'13), July 3-7, 2013, Osaka, Japan
2014	Track Organizer, Session Chair, *Manufacturing and Materials for Nanomedicine, Biology, and Nanoengineering*, ASME 2014 3rd Global Congress on NanoEngineering for Medicine and Biology (NEMB2014), February 2-5, 2014, San Francisco, CA
2007 – 2008	President of the Purdue University Turkish Students Association – elected to represent 100+ Turkish students on Purdue Campus
2006 – 2007	Secretary of the Purdue University Turkish Students Association Administrative Board

RESEARCH AWARDS

Active

Doris Duke Charitable Foundation, Innovations in Clinical Research Award
Period: 09/01/2013 – 08/31/2016
Role: PI (7.5% effort)
Title: 'SCD Biochip': TOWARDS A SIMPLE AND RELIABLE WAY TO MONITOR SICKLE CELL DISEASE
Objective: The aim of this project is to develop a complementary 'functional' complete blood count for sickle cell disease that will quantitate membrane and cellular properties in a clinically meaningful way.

Belcher-Weir Family Pediatric Innovation Award, University Hospitals, CWRU
Period: 09/01/2013 – 08/31/2014
Role: PI (0% effort)
Title: FUNCTIONAL COMPLETE BLOOD COUNT FOR CHILDREN WITH SICKLE CELL DISEASE VIA EASY-TO-USE BIOCHIP
Objective: This project aims to develop a complementary 'functional' complete blood count in sickle cell disease (SCD) for children that will quantitate membrane and cellular properties in a clinically meaningful way, using a biofluidic chip (Biochip) platform.

Steve Garverick Memorial Innovation Incentive Award, Cleveland VA Medical Center
Period: 01/01/2014 – 12/31/2014
Role: PI (0% effort)
Title: SYNOVIAL FLUID BIOCHIP FOR MONITORING JOINT AND PROSTHESIS HEALTH
Objective: This project aims to develop a synovial fluid biochip that accurately quantitates cellular content in a synovial fluid aspirate. This technology will help clinicians diagnose infection quickly and monitor joint and prosthesis health reliably in veteran population.